Local news

One of our members died this past January, William "Bill" Tilley. Bill was a
retired IBMer, husband, father and a computer hobbist with several TS machines and
an Atari, he loved life, people and computing. He is missed here at SINCUS.

Winter storm "Gary Ennis", as named by local radio personalities fortunately dumped
a meager helping of the white stuff, may many more storms do the same.

CapitalFest 89- see article in this issue- two SINCUS members are planning on
attending- Prez. Clyde Tackley and yours truly will be attending in May. If ya
wanta go- contact me or Clyde as SOON as possible for reservations.

This issue is late, again, and I'm sorry and the next one will also be late, as in
the May/June issue I will carry info on the outcome of the CapitalFest. This issue
is late due to the flu, and a head cold and the flu again! Ever since the last week
of January, ...yuck!

Hello Folks- we still meet- in the Vestal Library- the third Wednesday of the
month- we have that BIG tv room, and if attendance doesn't pick up we will hold it
in the closet! Bring a something to demo!

Hello and welcome to Eliana Tartarini, Exeter NH; Jon Kaczor, Brooklyn, OH; James

Curry, Rochester,NY and Joseph Barna, Port Richey, FL, thanks for joining us and
you are now eligible to submit an article on TS computer stuff.

New Stuff- from LARKEN Electronics- MAXCOM- a commo package for LARKEN disc and
cartridge users. I have had an opportunity to review this disc of programs, and
will report in this issue first impressions.

1989 schudule-below; Vestal Library, 7p on Wednesdays. It will be the 3rd
Wednesday of each month, same time and place.

    Have a HAPPY EASTERTIME,   +
       enjoy SPRINGtime,   +   Wednesday
    and attend the May CapitalFest!   +
—— Support your local User Group today!   ——+ ———— 7pm Vestal Library ————

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News, New, Views and Reviews..by Paul Hill

S.N.U.G. is gearing up, they have a charter from the state of Florida, the members have selected nominees for offices and now the officers are being voted on. Results to follow in next issue.

CAPITALFEST- May 5, 6 and 7, 1989 at the Howard Johnson Motor Inn, Route 450 and the Beltway (Eastside-around Washington D.C.)New Carrollton, MD. Contact C.A.T.S. CAPITALFEST, PO BOX 24, Garrett Park, Maryland 20896-0024 tele:(301)439-8756 and HURRY! Make plans, make those reservations NOW. This ought to be a well attended show because it is in the most heavily populated section of this country. By the way if this is your first trip to the Capital stay a least three more days to catch just some of the highlights of this fanatasic place! There are enough TS computer nuts hanging around here to really have a great time- put faces on names you have heard of, bump into hundreds of other members of the TS community, just plain folks who help others at the drop of a byte. See new and old stuff, learn, listen and maybe meet new friends, hear new ideas and enjoy.

CATSUG(Chicago) Nite-Times News-reprinted from ZX-Appeal, a plan on how to install a line busy indicator diode and another for a voltage regulator to stabilize modem output.

Sir Clive may be getting married pretty soon, from the Harrisburg Area TSUG via a member in England.

MAXCOM-from Larken. A terminal program for Larken Disc and cartridge users. A choice of 300 or 1200 baud receiving program, and a BBS program for your 2068. I have only tried the terminal package (on disc). It is in 64 columns in the terminal mode. It also allows you to load your buffer with whatever you want, and when the buffer is full, it automatically dumps to the disc. Note Oliger disc users must remove the B' board while the program is in use. The phone dialing system is called auto dialing, but it is set up for one number and one try. A simple loop added to the program could allow a try until answer system. One could also probably think up some way to add a page of numbers to elimanate the entering of numbers. Between the flu and local BBSs being down, I have only had time to try the terminal program, and I like the 64 characters across the screen. I had so much trouble with the local BBSs, that I thought the new MAXCOM had possibly screwed them up. Phew, was I glad to learn the problem was something else. You can get the MAXCOM from LARKEN, RMG and Ed Gray for $25 plus shipping.

Time Designs- where are you? Have read of sightings of the Sep/Oct issue, but none locally. This cannot help renewals. Maybe a merge of all forces into one mag may be the only way the TS community can support a healthy publication.

SMUG Bytes, POB 101, Butler WS 53007; Has an article and listing for a 2068 multitasking routine. It is copyrighted. We have on our swap disc a Sprite program written by Wes Brzozowski a couple years ago. This one has a smiling face bouncing all over the place, thru a listing or thru another program.

With much thanks to Ray Byler, a corresponding member from Ft Riley, KS we are now in possession of the product of much effort, a TS2068 and Spectrum ROM call listing, but listed both alphabetically and by address by both machines, with corresponding listing in the other machine. Ray sent a laser copy of the printout, some 10 pages both sides. We are going to reproduce this as part of the SINCUS NEWS CAPITALFEST Issue, which will be part of your May/June issue. To support the cost of this give away we will be selling copies of Computus Interruptus and Clone and some of our surplus TS1000s and other material.

TOMAHAWK
BY
DAVE MARSHALL
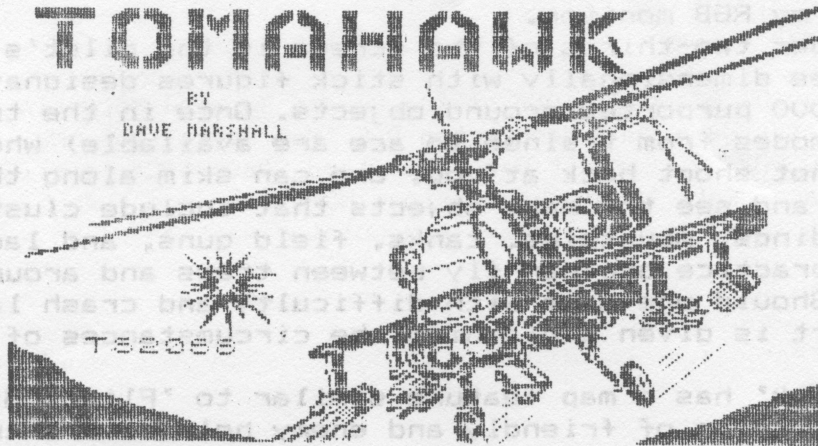
TOMAHAWK . . . . A Software Review

by John Colonna, S1NCUS

There are several flight simulation software for the T/S 2068. They include the original 'Flight Simulator', 'Fighter Pilot' - the F-15 simulation, 'Night Gunner' - the World War II bomber, and the great arcade type game 'Penetrator.' One that I have recently purchased is 'Tomahawk.' It simulates the U.S. Army attack helicopter - the AH-64A APACHE.

'Tomahawk' places you in the cockpit of this advanced aircraft. The lower third of the screen is the control panel that is very lifelike with colorful instrumentation that is responsive to the 'pilot's' needs. Not only are there visual cues (7 colors are displayed) to control movements, but audio ones as well. If you over torque the engine or the Doppler navigation system spots an enemy helicopter, the pilot is warned. The rotor blades whir faster as the throttle is opened. The Doppler navigation system has four modes of operation that allow one to find enemy 'copters, hunt out ground targets like tanks and field guns, choose other landing pads for refueling, rearming, and repair, and fly on beacon mode. The TADS (Target Acquisition & Designation System) seeks out helicopters, tanks, and field guns, displays them on its instrumentation, and visually pictures them in red or green to signify foe or friend. There are three levels of armament - guns that function up to a 2000 ft. range, rockets that are effective up to 4000 ft., and missiles with a lock-on feature that operate up to 3.1 miles. Various types of crosshairs designate each type and 'lock-on.' Would you believe that the instrument panel still has room for the artificial horizon that shows pitch, roll, drift, and pictures a tiny helicopter as you control it? This is in addition to visualization of the ammo supply, the four systems go no-go indicators, throttle and engine temperature dials, as well as a pilot's visual display unit with speed, altitude,

vertical speed indicator with up and down arrow, and time and distance to objective! And, believe it or not, it is very readable on my RGB monitor.

The upper two-thirds of the screen is the pilot's view that is done three dimensionally with stick figures designating the more than 7000 purported ground objects. Once in the trainee mode (four modes from trainee to ace are available) where the enemy will not shoot back at you, one can skim along the ground at 100 feet and see the many objects that include clusters of trees, buildings, mountains, tanks, field guns, and landing pads. With practice one can fly between trees and around mountains. Should one meet with difficulty and crash land, a status report is given explaining the circumstances of your bad fortune.

'Tomahawk' has a map feature similar to 'Flight Simulator.' Relative positions of friendly and enemy helicopters are shown and red and blue colors characterize allied and enemy sectors. With so many controls this software requires the use of two joysticks (after all there is a pilot and co-pilot/gunner in the real situation) or the keyboard. I use the keyboard most of the time and it does keep me busy! The documentation is succinct, but adequate. You've got to use 'Tomahawk' and practice to become an 'ace' pilot. I was very impressed with the educational nature of this program. I learned an awful lot about the intricacies of piloting a helicopter and the frustrations faced 'in the heat of the battle.' One realizes that you can not only fly forward and backward but sideways as well. I often wonder if these simulations are easier or more difficult than the actual thing. A friend of mine who is a pilot and built his own plane has the 'Flight Simulator' software. While he can easily land his plane, he can never land the computer!

'Tomahawk' was purchased from T & C Services, 20 Liberty Terrace, Buffalo, N.Y., 14215. The tape program loaded easily and I had no problem making a 'state' save to my Oliger disk system. This program I would rate as superior and at a very affordable price of $12.00 with more savings if you use a money order or certified check. Service has been very good with my order arriving in about a week.

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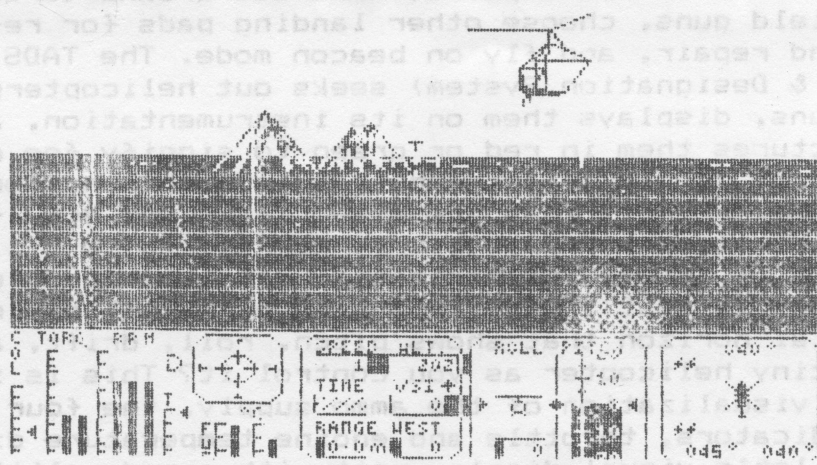
EXPLORING THE TIMEX/SINCLAIR 1000'S
## SINCLAIR LOGIC CHIP
(SCL)
by
Don Lamen, SINCUS
6-29-88
PART III, Conclusion

Note: In Part I, Nov/Dec 88, under the section titled "The SCL Chip", there is a list of circuits and/or functions of the chip. This final installment continues with (h) Internal Data Latch and goes to the conclusion. On the last page is a drawing of (f) Internal Data Bus.

Proposed Function Diagram of the ULA 2C184E Chip - SCL
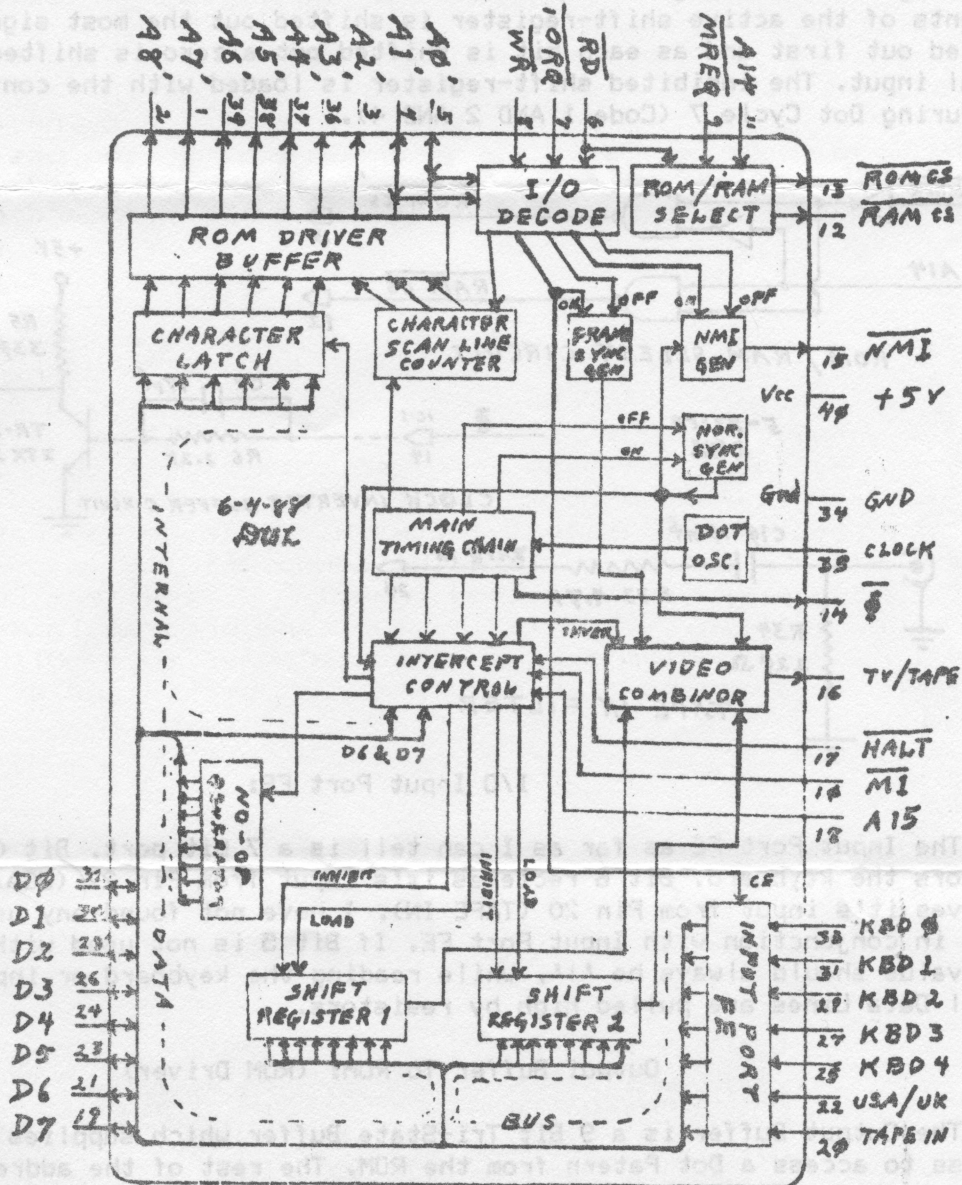

Internal Data Latch:

The Internal Data Latch is a 6 bit latch which latches in the data on Data Bus Lines D0 through D5 during Dot Cycle 3 (Code 1 AND 2 AND NOT 4). The latched data is outputted to the Address Lines A3' through A8' as part of the address to access the Dot Pattern from the ROM during Dot Cycles 6 & 7 (Code 2 AND 4).

5

No-Op Generator:

The No-Op Generator consists of eight inverters which forces all eight of the Data Bus Lines to 0 during Dot Cycles 4 & 5 (Code NOT 2 AND 4), just in time for the Z-80 to READ. 00000000 BINARY is the NOP instruction. This causes the microprocessor to fetch the next instruction, which is actually the next byte of data in the Data-File.

Two Shift Registers:

The Shift-Registers are alternated by bit 4 of the first counter of the Main Timing Chain (Mux Circuit). They are 8 bit shift-registers. The contents of one shift-register is being shifted out, while the other one is inhibited. When the contents of the active shift-register is shifted out the most significant bit is shifted out first and as each bit is shifted out a zero is shifted in via the serial input. The inhibited shift-register is loaded with the contents of the Data Bus during Dot Cycle 7 (Code 1 AND 2 AND 4).

ROM / RAM SELECT CIRCUIT

5-23-88 RBX

CLOCK INVERTER BUFFER CIRCUIT.

TAPE IN FILTER
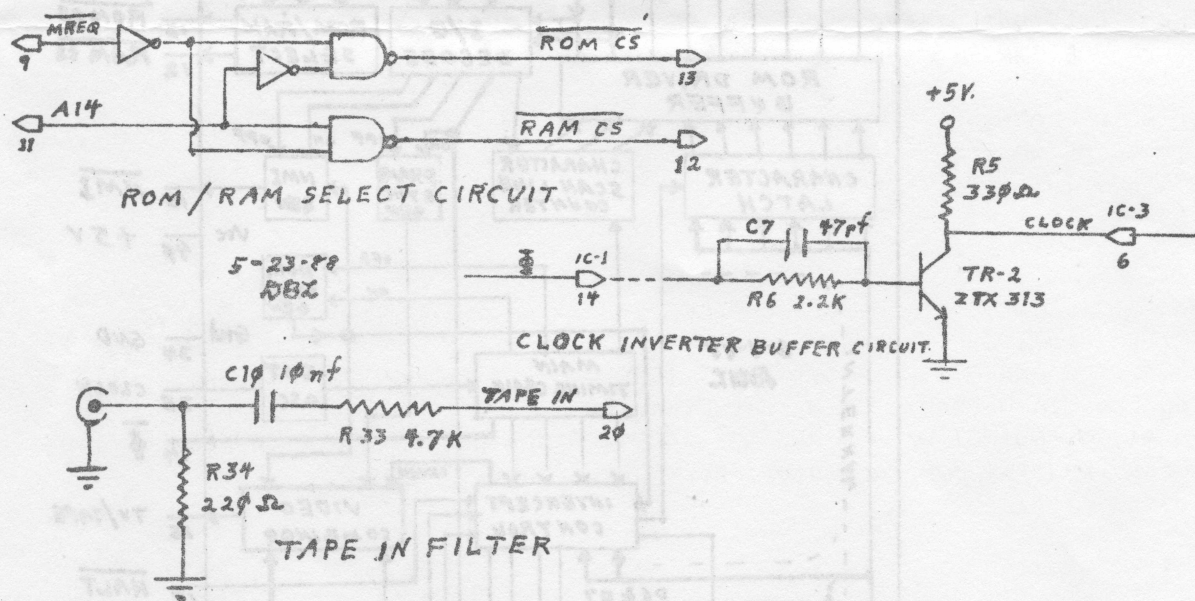
I/O Input Port FE:

The Input Port FE as far as I can tell is a 7 bit port. Bit 0 through Bit 4 monitors the keyboard. Bit 6 recieves it's input from Pin 22 (USA/UK). Bit 7 recieves it's input from Pin 20 (TAPE-IN). I have not found any use being made of Bit 5 in conjunction with Input Port FE. If Bit 5 is not used with this port then it's value should always be '1', while reading the keyboard or inputing tape data, as all Data Lines are pulled high by resistors.

Output Buffer To ROM: (ROM Driver)

The Output Buffer is a 9 Bit Tri-State Buffer which supplies part of an address to access a Dot Patern from the ROM. The rest of the address is supplied by the Microprocessor when it puts the Refresh Address on the main address lines, and comes from the Interrupt Register. The format of the whole address is:

I Reg. A15-A9   Char. Code A8'-A3'   Scan Count A2'-A0'

or

I*256+CODE* 8+COUNT

6
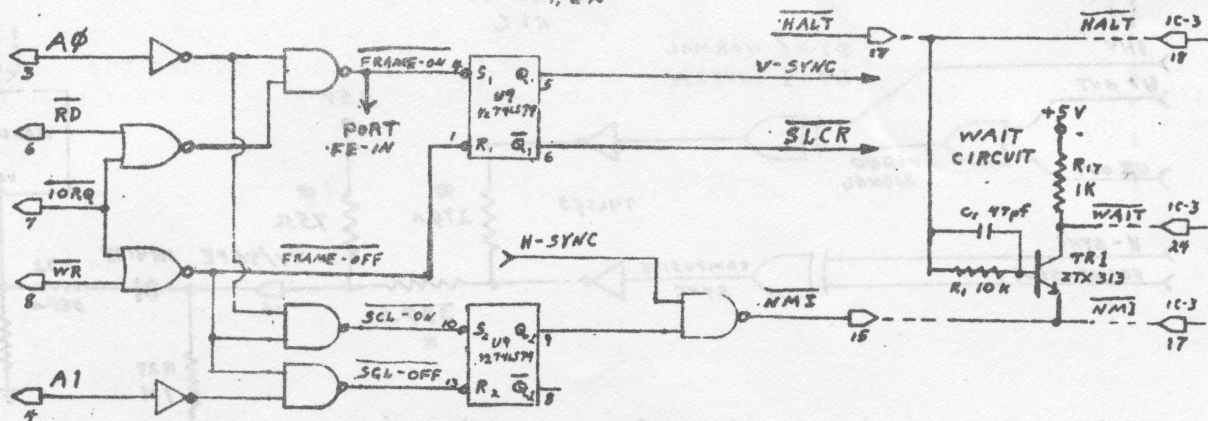
I/O Decoder:

The I/O Decoder is very primitive. It samples only 5 pins; A0, A1, NOT IORQ, NOT RD, and NOT WR. It performs the following functions:

1. When A0 = 0 AND NOT RD = 0 AND NOT IORQ = 0
   a) It turns on the Frame Sync Generator
   b) It enables Input Port FE
   c) As a result of the Frame Sync being on it holds the Scan Counter in the Reset state until the Frame Sync is turned OFF.
2. When NOT IORQ = 0 AND NOT WR = 0 any output will:
   a) Turn the Frame Sync Generator OFF and release the Scan Line Counter.
   b) Flash the TV screen.
3. When A0 = 0 AND NOT WR = 0 AND NOT IORQ = 0 the SCL ON-OFF Flip-Flop will be set enabling the Non-Maskable Interrupt Circuit.
4. When A1 = 0 AND NOT WR = 0 AND NOT IORQ = 0 the SCL ON-OFF Flip-Flop will be reset disabling the Non-Maskable Interrupt Circuit.

Non-Maskable Interrupt Generator:

The Non-Maskable Interrupt Generator consists of the SCLON-OFF Flip-Flop and a 2-input NAND gate. When the SCL ON-OFF Flip-Flop is set the NAND gate is enabled allowing the Horizontal Sync signal to pass on to Pin 15 (NOT NMI).

Wait Circuit:

This circuit is outside the SCL Chip on the P. C. Board and built around transistor TR-1. When the NOT NMI signal is Low and the NOT HALT signal is High, this circuit will pull the NOT WAIT pin of the Z-80 Low generating wait states until the Horizontal Sync signal goes Low.
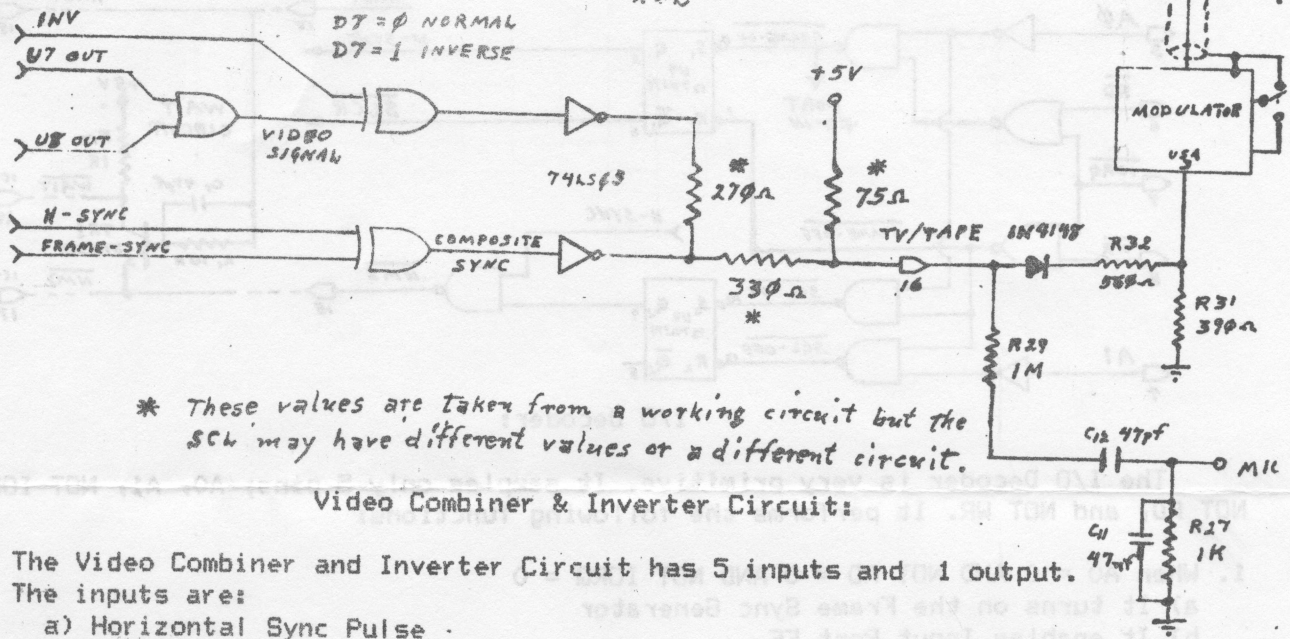
Frame Sync Generator:

The Frame Sync Generator is a SET-RESET Flip-Flop. It's Q output generates a signal for the Vertical Sync Pulse and goes to the Video Combiner Circuit. The NOT Q output supplies the reset for the Scan Line Counter. See I/O Decoder.

VIDEO COMBINOR
5-23-88

INV
U7 OUT

D7 = 0 NORMAL
D7 = 1 INVERSE

+5V

U8 OUT

VIDEO SIGNAL

74LS63

270Ω *

75Ω *

MODULATOR
U5A

H-SYNC
FRAME-SYNC

COMPOSITE SYNC

TV/TAPE 1N4148

R32

330Ω *

16

569Ω

R31
390Ω

R29
1M

C12 47pf

MIC

C11
47µf

R27
1K

* These values are taken from a working circuit but the
SCL may have different values or a different circuit.

Video Combiner & Inverter Circuit:

The Video Combiner and Inverter Circuit has 5 inputs and 1 output.
The inputs are:
   a) Horizontal Sync Pulse
   b) Vertical (Frame) Sync Pulse
   c) Output from Shift-Register 1
   d) Output from Shift-Register 2
   e) The NORMAL/INVERSE signal

The output is the composite video signal to Pin 16, which supplies both the
video signal for the TV and the signal for TAPE IN.

Inputs(a) and (b) are XORed together and inverted to form the composite sync
signal. Inputs (c) and (d) are ORed together and passed to one input of a 2-input
XOR gate. The input (e) goes to the other input of the XOR gate. The output signal
of this XOR gate is also inverted to form the video portion of the composite video
signal. The video and sync signals are next summed together producing the Composite
Video signal, which goes to Pin 16.

ROM/RAM Select Circuit:

The ROM/RAM Select Circuit is a simple circuit which operates as follows:
   a) When NOT MREQ (Pin 9) is Low and A14 (Pin 11) is also Low NOT ROM CS' (Pin
13) is Low and NOT RAM CS' is High. This enables the ROM and disables the RAM.
   b) When NOT MREQ is Low and A14 is High NOT ROM CS' is High and NOT RAM CS' is
Low. This enables the RAM and disables the ROM.
   c) When NOT MREQ is High both the ROM and the RAM are disabled.

CONCLUSION:

This concludes my description of the functions of the SCL Chip. At this time
I wish to remind you that this entire article is pure speculation based upon my
studies of the ROM routines. However, I do believe that my speculations are very
close to the actual architecture of the chip and can be used for practical
purposes.

Don Lamen, SINCUS
9-20-88

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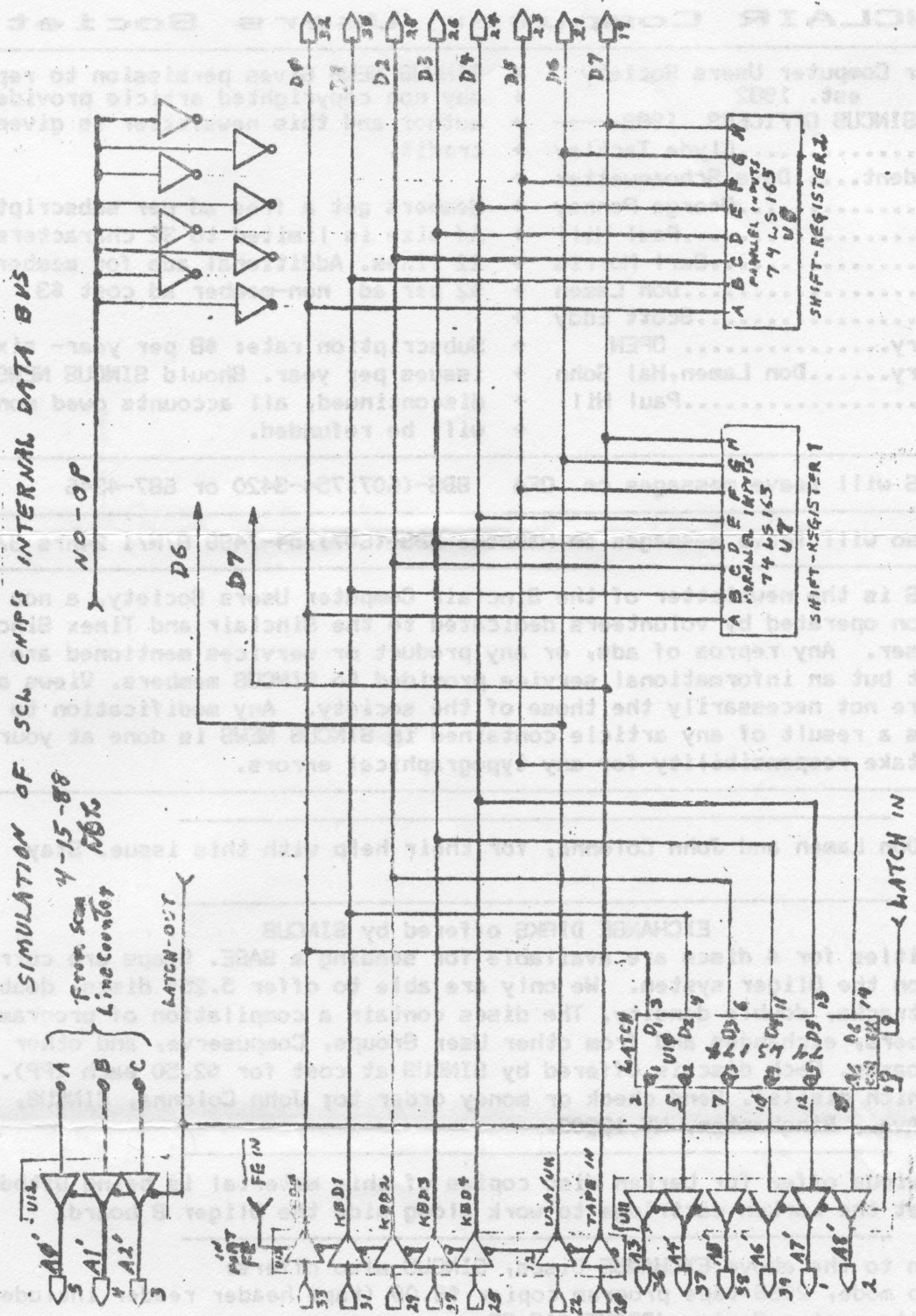
Simulation of SCL Chip's Internal Data Bus

This ends a three part series of data and artwork on the SCL chip found in the TS1000 by Donald Lamen. If you have any questions or comments on the series, contact Don at; RD3 - Box 3404, Windsor, New York 13665

Thanks from SINCUS Don, that was quite an effort putting together all this data in word and art form, documenting your search for what's in that *#$%& chip, with no help from the manufactor or Sinclair- ed.

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-SINCLAIR Computer Users Society-

SINCUS will leave messages on OFA   BBS-(507)754-3420 or 687-4346

SINCUS also will leave messages on HamBone BBS-(607)754-7498 8/N/1 24hrs 3/1200B

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opinions are not necessarily the those of the society. Any modification to your
computer as a result of any article contained in SINCUS NEWS is done at your risk.
We do not take responsibility for any typographical errors.

Thanks to Don Lamen and John Colonna, for their help with this issue. Stay
healthy!

EXCHANGE DISKS offered by SINCUS

The titles for 4 discs are available for sending a SASE. Swaps are currently
available on the Oliger system. We only are able to offer 5.25" discs, double
sided, 40 tracks, double density. The discs contain a compilation of programs from
SINCUS members, exchanges and from other User Groups, Compuserve, and other
bulletin boards. Each disc is offered by SINCUS at cost for $2.50 each (PP). Please
indicate which disc(s). Send check or money order to; John Colonna, SINCUS, 28
Guilfoyle Ave., Binghamton, NY 13903.

The previous offer for Larken disc copies of this material is being withdrawn
until we get the Larken cartridge to work along side the Oliger B board.

In addition to the above EXCHANGE Discs, SINCUS also offers:
CLONE a two mode, 2068 tape program copier $6.00 (tape header reader included)
Computus Interruptus Series (PRINT)$15 PP.
Computus Interruptus Series (DISC) in Oliger Disc format.

For information on any of the above please send a SASE, and we will be glad to
help. Write: Paul Hill, SINCUS, 1229 Rhodes Rd. Johnson City, NY 13790.

A reminder: May is election month, April is nomination month-all local members are
eligible for any office, so come on down, put your name in the hat, and VOTE!